

## **AMENDMENTS TO THE CLAIMS**

*The listing of claims will replace all prior versions and listings of claims in the application:*

### **Listing of Claims:**

1. **(Previously Presented)** An assembly of a transmitter optical assembly, a receiver optical assembly and a host, comprising:

the transmitter optical assembly including:

- a transmitter substrate that includes a transmitter power line and a transmitter conductive path coupled to a transmitter optical assembly connector;
- a laser source mounted on the transmitter substrate; and
- a transmitter integrated circuit mounted on the transmitter substrate, including:
  - a laser control communicably connected with one or more of the laser source, the transmitter power line, and the transmitter conductive path, the laser control including a transmitter memory portion, the transmitter memory portion including one or more memory components for receiving or storing data;

the receiver optical assembly including:

- a receiver substrate that includes a receiver power line and a receiver conductive path coupled to a receiver optical assembly connector;
- a photodiode mounted on the receiver substrate; and
- a receiver integrated circuit including:
  - a processing control communicably connected with one or more of the photodiode, the receiver power line, and the receiver conductive path, the processing control including a receiver memory portion, the receiver memory portion including one or more memory components for receiving or storing data; and

the host including:

- a host CPU;

transmitter specific conductive lines configured to communicate electrical signals  
with the transmitter optical assembly; and  
receiver specific conductive lines configured to communicate electrical signals  
with the receiver optical assembly.

2. **(Previously Presented)** The assembly as recited in claim 1, wherein the laser control further includes a laser modulator, the laser modulator administering an alternating current from the laser control to the laser source; and a laser bias, the laser bias administering a direct current from the laser control to the laser source.
3. **(Previously Presented)** The assembly as recited in claim 1, wherein the transmitter substrate further includes connections for one or more of a ground line, a diagnostic data line, and a diagnostic clock.
4. **(Previously Presented)** The assembly as recited in claim 1, wherein the transmitter conductive path is a transmission line that carries data from the host to the transmitter optical assembly, wherein the data are ultimately transmitted at the laser source.
5. **(Previously Presented)** The assembly as recited in claim 1, wherein the transmitter substrate comprises ceramic materials, and wherein circuit traces on the ceramic materials include three-dimensional metallic sputtering to shield electromagnetic interference.
6. **(Previously Presented)** The assembly as recited in claim 1, the transmitter optical assembly further including a monitor photodiode, the monitor photodiode communicably connected with the laser source and the laser control, the monitor photodiode providing the laser control with status information about the laser source.
7. **(Previously Presented)** The assembly as recited in claim 1, wherein the transmitter memory portion comprises one or more of an EEPROM, and a RAM.
8. **(Previously Presented)** The assembly as recited in claim 7, wherein at least one of the one or more memory components of the transmitter memory portion includes a portion that stores one or more of status and fault information, and operating temperature information.

9. **(Previously Presented)** The assembly as recited in claim 7, wherein at least one of the one or more memory components of the transmitter memory portion includes a portion for receiving diagnostic data.
10. **(Canceled)**
11. **(Previously Presented)** The assembly as recited in claim 1, wherein the processing control further includes a temperature sensor.
12. **(Previously Presented)** The assembly as recited in claim 1, wherein the photodiode is an avalanche photo-diode, the receiver optical assembly further including a bias control mounted on the receiver substrate, the bias control communicatively connected with the avalanche photo-diode, and the processing control.
13. **(Previously Presented)** The assembly as recited in claim 1, wherein the receiver conductive path is a data receiving line that carries data from the receiver optical assembly to the host.
14. **(Previously Presented)** The assembly as recited in claim 1, wherein the receiver substrate comprises ceramic materials, and wherein circuit traces on the ceramic materials include three-dimensional metallic sputtering to shield electromagnetic interference.
15. **(Previously Presented)** The assembly as recited in claim 1, wherein at least one of the one or more memory components of the receiver memory portion include one of an EEPROM, and a RAM.
16. **(Previously Presented)** The assembly as recited in claim 15, wherein at least one of the one or more memory components of the receiver memory portion includes a portion for receiving and storing diagnostic data.
17. **(Previously Presented)** The assembly as recited in claim 16, wherein the receiver substrate further comprises connections for one or more of a ground line, a diagnostic data line, and a diagnostic clock.
18. **(Canceled)**
19. **(Canceled)**

20. **(Canceled)**

21. **(Canceled)**

22. **(Canceled)**

23. **(Canceled)**

24. **(Canceled)**

25. **(Canceled)**

26. **(Canceled)**

27. **(Canceled)**

28. **(Canceled)**

29. **(Canceled)**

30. **(Previously Presented)**      An optical transceiver comprising:
- a combination transmitter and receiver substrate including a power line, at least one data transmission line, and at least one data reception line configured to connect to a host;
  - a laser source mounted on the combination transmitter and receiver substrate;
  - a photo detector mounted on the combination transmitter and receiver substrate; and
  - a control integrated circuit mounted on the combination transmitter and receiver substrate including:
    - a modulator configured to provide adjustable current to the laser source to transmit electrical data received from the host to the laser source;
    - a post amplifier configured to receive received electrical data from the photo detector and amplify the received electrical data signal before relaying the electrical data signal to the host computer along the at least one data reception line; and
    - a processor configured to receive diagnostic data from the host computer, the processor being incorporated in the integrated circuit along with the modulator and post amplifier, such that impedance that

would otherwise be present in a high frequency electronic data communication is minimized due to the integration of the modulator, post amplifier, and processor in a common integrated circuit.

31. **(Canceled)**

32. **(Previously Presented)** The assembly as recited in claim 1, wherein the laser control is connected directly to the laser source.

33. **(Previously Presented)** The assembly as recited in claim 1, further comprising a bond wire directly connecting the laser control to the laser source.

34. **(Previously Presented)** The assembly as recited in claim 1, wherein the processing control is directly connected to the photodetector.

35. **(Previously Presented)** The assembly as recited in claim 1, further comprising a transimpedance amplifier and a bond wire, wherein the photo detector is directly connected to the transimpedance amplifier or processing control by the bond wire.

36. **(Canceled)**

37. **(Canceled)**

38. **(Canceled)**

39. **(Canceled)**

40. **(Previously Presented)** The system of claim 1, wherein:

the transmitter optical assembly connector includes an edge connector for electrically connecting to the transmitter specific conductive lines of the host;

the receiver optical assembly further includes an edge connector for electrically connecting to the receiver specific conductive lines of the host; and

the host includes:

a transmitter optical assembly receptacle for receiving the transmitter optical assembly's edge connector; and

a receiver optical assembly receptacle for receiving the receiver optical assembly's edge connector.

41. **(Previously Presented)** The system of claim 1, wherein the laser control primarily uses analog signaling.
42. **(Previously Presented)** The system of claim 41, wherein the transmitter optical assembly does not store digital diagnostic data in the memory portion and no matching network is present between the transmit integrated circuit and the laser source.
43. **(Previously Presented)** The optical transceiver of claim 30, further comprising a transimpedance amplifier (TIA) mounted on the combination transmitter and receiver substrate, the integrated circuit further including a TIA supply for supplying power to the TIA.
44. **(Previously Presented)** The optical transceiver of claim 43, wherein the photo detector includes an avalanche photodiode (APD) and the integrated circuit further includes APD bias command control circuitry for sending commands to an APD regulator circuit mounted on the combination transmitter and receiver substrate.
45. **(Previously Presented)** The optical transceiver of claim 30, wherein the processor is configured to set limits on power used by the laser source and the photodetector.
46. **(Previously Presented)** The optical transceiver of claim 30, wherein the integrated circuit includes a sense and control component that communicates with a monitor photo-diode to provide status information to the processor regarding the laser source.